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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,520	05/15/2006	**Raymond De Callafon**	0321.68700	8437

24978 7590 06/08/2009

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EXAMINER	
MEI, XU	

ART UNIT	PAPER NUMBER
2614	

MAIL DATE	DELIVERY MODE
06/08/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/579,520	DE CALLAFON, RAYMOND	
	Examiner	Art Unit	
	Xu Mei	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03/23/2009*.

2a)☒ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *6,9,10,17 and 20-27* is/are allowed.

6)☒ Claim(s) *1-5,7,8,11-16,18,19 and 28-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is responsive to the applicant's amendment dated 03/23/2009.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5, 7-8, 11-16, 18-19 and 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi in view of Heuberger et al (A Generalized Orthonormal Basis for Linear Dynamical System, IEEE Transactions on Automatic Control, Vol. 40, No 3, pp. 451-465).

Regarding Claims 1 and 4, Eguchi discloses an active noise control apparatus (Figure 1) for reducing noise from noise source (1), comprising: a first detector (3) for detecting noise produced by the noise source; a generalized finite impulse response filter (6) for receiving noise signals of the detected noise from said first detector, and generating control signals for reducing the noise from the noise sources (y); and a sound generator (5) for producing sound based on said control signals from said generalized FIR filter substantially canceling the noise from the noise source. What's not taught by Eguchi is the specific generalized or orthonormal FIR filter includes at

least one generalized basis function.

Heuberger et al. discloses a generalized or orthonormal FIR transfer function in a form as claimed (pg. 459, Col. 2, line 34) described by an orthonormal basis function, direct feed through term, and optimal filter coefficients. It would have been obvious to one of ordinary skill in the art to modify the FIR filter of the active noise control apparatus of Eguchi with a generalized or orthonormal FIR transfer function that including at least one generalized or orthonormal basis function, as shown by Heuberger et al, in order to generate optimal filter coefficients for the FIR filter to improve accuracy of active noise control for the active noise control apparatus.

Regarding Claim 2, Eguchi further discloses said generalized FIR filter is a feedforward compensator (Figure 1).

Regarding Claim 3, Eguchi further discloses said first detector (3) is located downstream of the noise source (1), and said sound generator (5) is located downstream of said first detector.

Regarding Claim 8, Eguchi further discloses a second detector (4) for detecting noise down stream of said sound generator.

Regarding Claim 11, Eguchi further discloses the first detector and second detector are microphones, and said sound generator is a speaker (Col. 7, lines 46-54).

Regarding claim 12 and 15, Eguchi discloses a method for reducing noise from a noise source in an active noise control system, comprising: detecting first noise produced by the noise source (1); generating control signals (y) from a generalized finite

impulse response filter (6) for reducing the first noise from the noise source based on a first signal of said detected noise; and producing sound (5) based on said control signals for substantially canceling said first noise from the noise source. What's not taught by Eguchi is the specific generalized or orthonormal FIR filter includes at least one generalized basis function.

Heuberger et al. discloses a generalized or orthonormal FIR transfer function in a form as claimed (pg. 459, Col. 2, line 34) described by an orthonormal basis function, direct feed through term, and optimal filter coefficients. It would have been obvious to one of ordinary skill in the art to modify the FIR filter of the active noise control apparatus of Eguchi with a generalized or orthonormal FIR transfer function that including at least one generalized or orthonormal basis function, as shown by Heuberger et al, in order to generate optimal filter coefficients for the FIR filter to improve accuracy of active noise control for the active noise control apparatus.

Regarding claim 13, Eguchi further discloses said generalized FIR filter is a feedforward compensator (Figure 1).

Regarding claim 14, Eguchi further discloses said first noise (1) is detected by a microphone (3) located downstream of the noise source, and said sound is produced by a speaker (5) located downstream of said microphone.

Regarding claim 19, Eguchi further discloses detecting second noise (4) after said sound based on said control signals has been produced.

Regarding Claim 5 and 16, Heuberger et al. further discloses constructing functions based on recursive equations (Pg. 456, Col. 1).

Regarding Claims 7 and 18, Heuberger et al. further discloses identifying coefficients through a least-squares routine (Pg. 452, Col. 1).

Regarding claims 28-31, see pages 459-460 of Heuberger et al.

Allowable Subject Matter

4. Claims 6, 9-10, 17, and 20-27 are allowed over prior art of record.

Response to Arguments

5. Applicant's arguments filed 03/23/2009 have been fully considered but they are not persuasive.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention

where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, utilize a generalized FIR including at least one generalized or orthonormal basis function as shown by Heuberger et al, to modify the FIR filter shown by Eguchi, with the advantages as described in the paper of Heuberger et al for general linear ANC system of Eguchi would have been considered in the knowledge generally available to one of ordinary skill in the art when the references of Eguchi and Heuberger are available.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xu Mei whose telephone number is 571-272-7523. The examiner can normally be reached on maxi flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Xu Mei/
Primary Examiner, Art Unit 2614
05/27/2009